CLAIMS

What is claimed is:

1. A heat sink for use with an axial flow fan comprising:

a core having a central axis; and

a plurality of cooling fins arranged about the core, each fin having a base and a tip, wherein the bases are coupled to the core substantially parallel to the central axis, and wherein the fins are shaped to capture a tangential component of air from the fan.

2. The heat sink recited in claim 1, wherein an upper portion of each of the fins is bent towards the tangential component.

3. The heat sink recited in claim 1, wherein the fins are curved towards the tangential component, and wherein an upper portion of each of the fins is bent towards the tangential component.

4. A heat sink for use with an axial flow fan comprising:

a core having a central axis; and

a plurality of cooling fins arranged about the core, each fin having a base and a tip, wherein the bases are coupled to the core substantially parallel to the central axis, wherein the fins are shaped to capture a tangential component of air from the fan, and wherein the core is shaped to maximize the number of fins while maintaining a substantially uniform aspect ratio in the fins.

5. The heat sink recited in claim 4, wherein an upper portion of each of the fins is bent towards the tangential component

6. The heat sink recited in claim 4, wherein the fins are curved towards the tangential component, and wherein an upper portion of each of the fins is bent towards the tangential component.

7. The heat sink recited in claim 4 wherein the core comprises a central cavity to receive a thermal plug formed of a material having a high thermal conductivity.

8. An electronic assembly comprising:

a substrate;

an electronic component mounted on a surface of the substrate;

an axial flow fan to move air towards the substrate, the air having an axial component and a tangential component; and

a heat sink including

a first face in thermal contact with the electronic component;

a second face facing the fan;

a core having a central axis; and

a plurality of cooling fins arranged about the core, each fin having a base and a tip, wherein the bases are coupled to the core substantially parallel to the central axis, and wherein the fins are shaped to capture both components of air.

9. The electronic assembly recited in claim 8, wherein an upper portion of each of the fins is bent towards the tangential component.

10. The electronic assembly recited in claim 8, wherein the fins are curved towards the tangential component, and wherein an upper portion of each of the fins is bent towards the tangential component.

11. The electronic assembly recited in claim 8, wherein the electronic component comprises an integrated circuit (IC).

12. The electronic assembly recited in claim 11, wherein the fins are formed of material having a high thermal conductivity, and wherein the aspect ratio of the fins is sufficient to maintain a junction temperature within the IC at or below a predetermined maximum value.

13. An electronic system comprising:

a circuit board;

a processor integrated circuit (IC) mounted on the circuit board;

at least one chipset mounted on the circuit board and electrically coupled to the processor IC for operation in conjunction with the processor IC;

at least one axial flow fan to move air towards the circuit board, the air having both an axial component and a tangential component; and

at least one heat sink including

a first face in thermal contact with either the processor IC or the chipset;

a second face facing the at least one fan;

a core having a central axis; and

a plurality of cooling fins arranged about the core, each fin having a base and a tip, wherein the bases are coupled to the core substantially parallel to the central axis, and wherein the fins are shaped to capture both components of air.

14. The electronic system recited in claim 13, wherein the core is shaped to maximize the number of fins while maintaining a substantially uniform aspect ratio in the fins.

15. The electronic system recited in claim 13, wherein the fins are formed of material having a high thermal conductivity, and wherein the aspect ratio of the fins is sufficient to maintain a junction temperature within the IC at or below a predetermined maximum value.

16. The electronic system recited in claim 13, wherein the fins are curved towards the tangential component.

17. The electronic system recited in claim 13, wherein an upper portion of each of the fins is bent towards the tangential component.

18. The electronic system recited in claim 13, wherein the fins are curved towards the tangential component, and wherein an upper portion of each of the fins is bent towards the tangential component.

19. A heat sink comprising:

a core having a central axis, and having a surface to thermally contact a heat-generating electrical component;

a plurality of cooling fins arranged about the core, each fin having a base and a tip, wherein the bases are coupled to the core substantially parallel to the central axis, and wherein an upper portion of each of the fins is bent in the same relative direction; and

a first face having a periphery defined by the fin tips, wherein the first face is to face the component, and wherein the first face comprises inter-fin openings.

20. The heat sink recited in claim 19, wherein the inter-fin openings extend from the base to the tip of selected fins.

21. The heat sink recited in claim 19, wherein the periphery of the first face has a semi-rectangular shape.

22. The heat sink recited in claim 19, wherein the first face substantially matches the shape of the core.

23. The heat sink recited in claim 19, wherein the electronic component comprises an integrated circuit (IC).

24. The heat sink recited in claim 23, wherein the fins are formed of material having a high thermal conductivity, and wherein the aspect ratio of the fins is sufficient to maintain a junction temperature within the IC at or below a predetermined maximum value.

25. A heat sink comprising:

a core having a central axis, and having a surface to thermally contact a heat-generating electrical component;

a plurality of cooling fins arranged about the core, each fin having a base and a tip, wherein the bases are coupled to the core substantially parallel to the central axis, wherein the fins are curved in the same relative direction, and wherein an upper portion of each of the fins is bent; and

a first face having a periphery defined by the fin tips, wherein the first face is to face the component, and wherein the first face comprises inter-fin openings.

26. The heat sink recited in claim 25, wherein the inter-fin openings extend from the base to the tip of selected fins.

27. The heat sink recited in claim 25, wherein the periphery of the first face has a semi-rectangular shape.

28. The heat sink recited in claim 25, wherein the first face substantially matches the shape of the core.

29. The heat sink recited in claim 25, wherein the electronic component comprises an integrated circuit (IC).

30. The heat sink recited in claim 29, wherein the fins are formed of material having a high thermal conductivity, and wherein the aspect ratio of the fins is sufficient to maintain a junction temperature within the IC at or below a predetermined maximum value.